

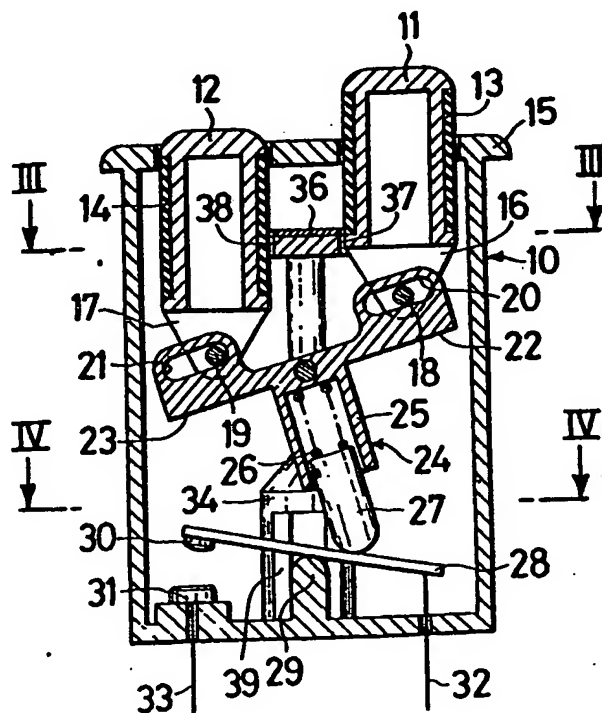
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(54) Switch for motor vehicle dashboards

(57) A switch 10 for a motor vehicle comprises two push-buttons 11 and 12 or differently coloured transparent material partly covered by opaque sleeves 13 and 14. The push buttons are operationally connected together by a toggle rocker mechanism 24 which acts on switch contacts 30, 31. When a pushbutton 11, 12 is in a raised position, light is transmitted from a light source via a light transmitting member 34, 36 to the coloured pushbutton 11, 12 thereby indicating the switch position. When a pushbutton 11, 12 is in a depressed position, the sleeve 13, 14 thereon prevents the transmission of light thereto.

Fig.1



GB 2 099 222 A

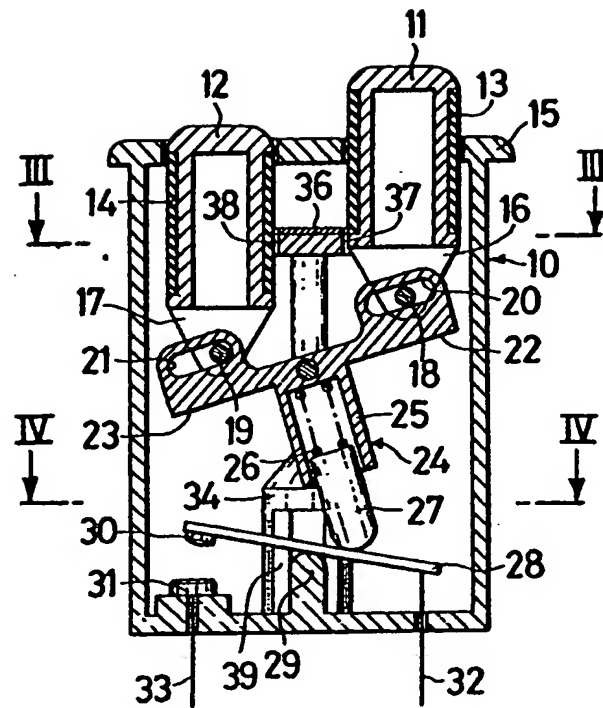
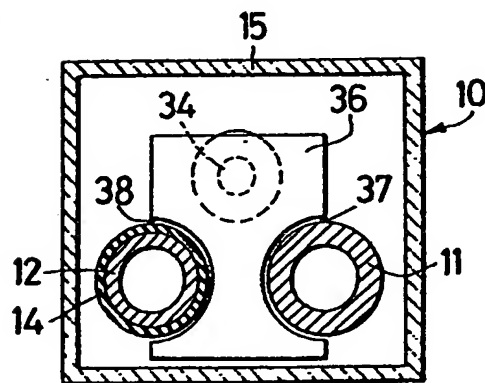
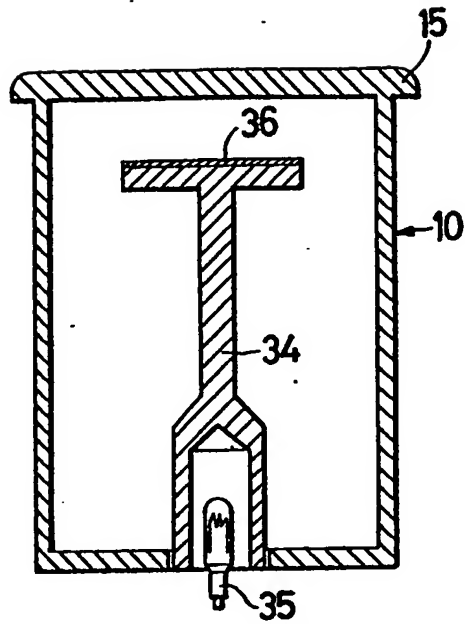
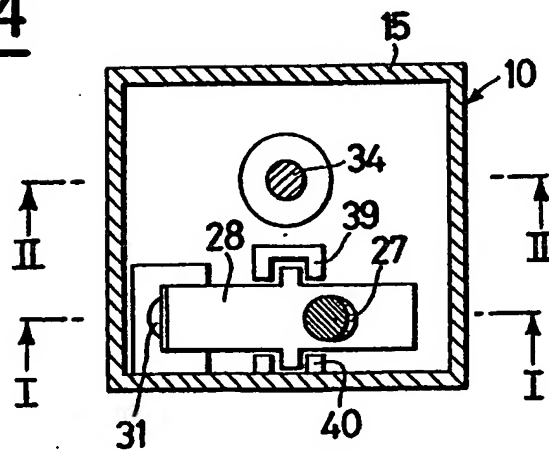
Fig.1Fig.3

Fig.2Fig.4

SPECIFICATION

Improved switch, particularly for motor vehicle dashboards

5 Various switches of the rocker push-button and lever type are known relative to electrical controls mounted on motor vehicles, as are various systems of the luminous and/or positioning type for identifying whether a control is switched on.

10 However, the identification of the state of the switch contacts is difficult, particularly at night, if the switch is located in a position which is not within easy vision of the driver, as often happens. The new device according to the invention obviates these drawbacks and facilitates identification of the state of the switch contacts by showing whether a particular control is switched off but in position for switching on, rather than already switched on. The said device is constituted by a switch comprising at least two adjacent push-button elements the purpose of which is to operate the contacts and to display the state of said contacts, characterised in that the push-button elements are connected together by a rocker mechanism such as to assume a determined position relative to a light source and a consequent determined luminous colouration which identifies whether a particular control is switched off but in position for switching on.

20 A particular control which is in position for switching on is therefore detectable by two indications, namely a physical indication represented by the positions (outwardly projecting or raised) of the push-button element, and a luminous indication represented by the luminous colouration which said push-button element assumes when in a position in which it can be operated (for example when it projects outwards).

25 According to a preferred embodiment of the invention, said push-button elements are also characterised by being each constituted by a collar of coloured transparent material such as methacrylate, partly covered by a screen of opaque material in such a manner as to transmit the light emitted by the light source only when that portion thereof which is not screened becomes located in the trajectory of the light beam.

30 Preferably, the device is constituted by a container in which there are disposed at least two push-buttons of substantially cylindrical shape, each connected to a rocker mechanism which engages with the mobile switch contact, so as to enable the electrical circuit in which said switch is connected to be broken or made by pressing one or other of the push-buttons.

35 When the first of said push-buttons is illuminated with a determined colour and is raised or projecting from the container, this signifies for example that the switch contact is open and consequently the second push-button is in a lowered position, is not illuminated and is opaque. When however the second push-button is illuminated, again with a determined colour (different from that of the first push-button) and is raised and projecting from its container, this signifies that the switch contact is closed.

The said first and second push-button are illuminated alternately by a single light source disposed on the bottom of the container and able to indirectly illuminate said push-buttons by way of a suitably shaped tube member constructed of a transparent material having good light conductivity. The tube member conveys and transmits the light emitted by the light source, for example a bulb, to the first or second push-button according to the (raised or lowered) position assumed by said push-buttons, and thus according to the relative state of the switch contacts. The characteristics and advantages of the present invention will be more apparent from the non-limiting description given hereinafter of one embodiment thereof, illustrated on the accompanying drawings in which:

40 *Figure 1* is a section through the switch according to the invention on the line I-I of *Figure 4*;

45 *Figure 2* is a section through the same switch on the line II-II of *Figure 4*;

50 *Figure 3* is a section on the line III-III of *Figure 1*;

55 *Figure 4* is a section on the line IV-IV of *Figure 1*.

The figures show by way of non-limiting example a switch indicated overall by 10 and constituted by a first and second push-button indicated by 11 and 12 respectively. The push-buttons are constructed of transparent material, coloured for example red and green in a preferred embodiment, said push-buttons being substantially of cylindrical shape and comprising on their outer surface protection sleeves indicated by 13 and 14 in order to screen them and prevent the emergence of light in zones where it is not required, the push-buttons being slidably inserted into suitable seats in the wall 15 of the switch casing. The reference numerals 16 and 17 indicate tongues which are rigid with said first and second push-button 11 and 12, and the reference numerals 18 and 19 indicate two pins rigid with the tongues and engaging in the slots 20 and 21 provided in the lugs 22 and 23 of the toggle rocker mechanism which is indicated overall by 24. Said mechanism 24 comprises a socket 25 connected to the lugs 22 and 23 and into which a pre-loaded spring indicated by 26 is inserted for engagement with the cylindrical slider 27. The slider 27 terminates in a hemispherical portion lying in contact with the blade 28 which is pivoted on the pin 29 and supported laterally by the guides 39 and 40.

60 The reference numeral 30 indicates the mobile contact carried by the lever 28, and 31 the fixed switch contact, the two cables for connection to the electric circuit (not shown) being indicated by 32 and 33. The reference numeral 34 indicates a tubular member formed from a cylindrical cavity, in which the bulb 35 is inserted, and from a stem which terminates in a plate 36 provided with recesses 37 and 38 in positions corresponding with the push-buttons, as shown in *Figure 3*. Said tubular member 34 is also constructed of transparent material arranged to transmit the light beam emitted by the bulb.

65 The principle of operation of the switch is apparent from *Figure 1*. When the switch is open, the contacts 30 and 31 are kept separated by the action of the toggle rocker mechanism 24 on the blade 28, and in

this case the push-button 11 is active and projects outwards as its head of transparent material lies in a position corresponding with the relative recess 37 in the plate 36 of the tubular member 34. The lateral and end walls of the push-button 11 receive the light beam originating from the bulb 35 and transmitted by the tubular member 34, to assume the required colouration. Consequently, when the push-button 11 is in a projecting position and is luminously coloured, for example green, this indicates that the switch is open. In contrast, the push-button 12 is inactive and completely lowered, and is opaque to the view. In order to close the switch, the push-button 11 must be pushed so that the rocker mechanism 24 rotates about the pivot constituted by the hemispherical portion of the slider 27 and simultaneously slides on the blade 28, to cause it to rock about its fulcrum 29. The contact 30 becomes closed on to the contact 31, and simultaneously the push-button 12 becomes active and is urged outwards by the said rocker mechanism 24. Under these conditions, the transparent material head of the push-button 12 now lies in a position corresponding with the relative recess in the plate 36 rigid with the tubular member 34, so that the lateral and end walls of the push-button 12 are traversed by the light beam conveyed by the tubular member 34, and assume the required colouration. When the push-button 12 is in a projecting position and is luminously coloured, for example red, this indicates that the switch is closed. In this case, the push-button 11 is inactive and is completely lowered, and is opaque to the view. A projecting position and predetermined luminous colouration of a given push-button thus indicates the state of the switch contacts, and allows identification of any control which is switched off but in position for switching on.

Two switches each operated by a respective pair of push-buttons such as 11 and 12 can be arranged in a single block, in this case a single bulb such as the bulb 35 and a single tubular member such as the tubular member 34 being sufficient, this latter however being provided with a plate comprising four recesses in order to transmit the light beam towards the active push-buttons of each pair.

CLAIMS

1. A switch for operating the electrical contacts of an electrical circuit disposed on board a vehicle, comprising at least two push-button elements constructed of transparent material of suitable colour, their purpose being to operate and display the state of the contacts; said push-button elements being operationally connected to said contacts by way of a toggle rocker mechanism, said switch also comprising a light source able to emit a light beam towards said push-buttons; the switch being characterised in that the push-button elements are connected together by said rocker mechanism such as to assume a determined position relative to said light source and a consequent luminous colouration which identifies whether a particular control is switched off but is positioned for switching on.
2. A switch as claimed in claim 1, characterised

in that each push-button element is constituted by a collar of coloured transparent material, partly covered by a screen of opaque material in such a manner as to transmit the light emitted by said light source only when that portion thereof which is not screened becomes located in the trajectory of the light beam.

3. A switch as claimed in claim 2, characterised in that said light source is constituted by a bulb inserted into a tubular member constructed of transparent material and comprising a plate which is provided with recesses in positions corresponding with the push-button elements and is arranged to direct the light beam towards the unscreened portion of the collar of the push-button elements.

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